MEMORANDUM

DATE:

SUBJECT: ENFORCEMENT ACTION MEMORANDUM: Determination of Need to Conduct a Time-Critical Removal Action at Sediment Management Units 56 and 57, part of the Lower Fox River NRDA/PCB Releases Site, Winnebago, Outagamie, Brown, Oconto, Marinette, Kewaunee, and Door Counties, Wisconsin and Menominee and Delta Counties, Michigan (Site ID# A565)

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Emergency Response Branch - Section 2

THRU: William E. Muno, Director
Superfund Division

TO: Francis X. Lyons
Regional Administrator

I. PURPOSE

The purpose of this Memorandum is to document the determination of the need to conduct a time-critical removal action for a portion of Sediment Management Units 56/57 (SMU 56/57) which are themselves part of the Lower Fox River NRDA/PCB Releases Superfund Site (Site). The Site touches on Winnebago, Outagamie, Brown, Oconto, Marinette, Kewaunee, and Door Counties, Wisconsin and Menominee and Delta Counties, Michigan. The portion of SMU 56/57 for which this time critical removal action is proposed consists of the "footprint" of an uncompleted dredging project previously undertaken by Potentially Responsible Parties (PRPs) under an agreement with the State of Wisconsin Department of Natural Resources (WDNR). This consists of subunits 12, 13, 14, 15, 16, 17, 23, 24, 25, 26, 27, 28 and portions of 18 and 29. In order to obtain stable side slopes, sediments from portions of subunits 34, 35, 36, 37, 38, 39 and 40 will be removed. This area will be identified herein as Sediment Management Unit 56/57, Subunit A (SMU 56/57-A). The response actions proposed herein will

mitigate threats to public health, welfare, and the environment posed by the presence of an uncontrolled hazardous substance located at SMU 56/57-A. Contamination of the SMU 56/57-A sediments, surface waters and impacted wildlife are a result of the discharge of PCBs to the river from facilities owned and operated by certain (PRPs). These PRPs have been identified as: Appleton Papers Inc., Fort James Corporation, P.H. Glatfelter Company, NCR Corporation, Riverside Paper Company, U.S. Paper Mills Corporation, and Wisconsin Tissue Mills Inc.

The response action proposed herein will mitigate threats to public health, welfare, and the environment posed by the presence of a continuing, uncontrolled release of a hazardous substance into the food chain of the Lower Fox River and Green Bay system from exposed undredged sediments. The proposed response actions include sediment dredging, containment, monitoring, water treatment, and disposal of contaminated sediments.

Due to the contaminated nature of the sediment, the continuing release of contamination into the food chain and potential exposure to the public, this removal action will be classified as time-critical. The project will require approximately 145 on-site working days to complete. It is currently anticipated that this response will be completed by a responsible party pursuant to an Administrative Order on Consent (AOC) or a Unilateral Administrative Order (UAO).

Among the several PRPs, Fort James Corporation (FJC) is uniquely situated to undertake the response actions called for in this Action Memorandum. FJC owns and operates substantial onshore facilities immediately adjacent to SMU 56/57. Included in those facilities are a dewatering lagoon and a nearby landfill with unused capacity that is already permitted to accept PCB sediments. Moreover, while the PCBs located in SMU 56/57 cannot be wholly attributed to FJC, certainly a significant portion of them were released from the FJC facilities.

This site is proposed to be on the National Priorities List.

II. SITE CHARACTERISTICS

A. SITE DESCRIPTION

CERCLIS ID # WI0001954841

The northwest corner of SMU 56/57-A Site is located at latitude 44°29'37.26" and longitude 88°01'39.40". This Site is within the Lower Fox River NRDA/PCB Releases Site, located in or touching on Winnebago, Outagamie, Brown, Oconto, Marinette, Kewaunee, and Door Counties, Wisconsin, and Menominee and Delta Counties, Michigan (Figure 1). The Site has been proposed for inclusion on the Superfund National Priorities List. A portion of Green Bay is also part of the Site, and is downstream of SMU 56/57-A Site. Green Bay includes approximately 2700 square miles though not all of Green Bay is included in the Site. The population of the Lower Fox River Valley is approximately 375,000 people, approximately 7% to 8% of the state's population.

Among Wisconsin residents, the low-income percentage is 28% and the minority percentage is 9%. To meet the Environmental Justice (EJ) concern criteria, the area within 1 mile of the Site must have a population that is twice the state low-income percentage and/or twice the state minority percentage. That is, the area must be at least 56% low-income and /or 18% minority. At this Site, the low-income percentage is 59.3% and the minority is 21.65% as determined by the Landview III EJ analysis. Therefore, this Site does meet the region's EJ criteria based on demographics as identified in "Region 5 Interim Guidelines for Identifying and Addressing a Potential EJ Case, June 1998".

The Lower Fox River flows approximately 39 miles from Lake Winnebago in a northeasterly direction, discharging into Green Bay in northeast Wisconsin. The bay of Green Bay, is 119 miles long and averages 23 miles in width.

The Fox River has a series of dams between Lake Winnebago and Green Bay, with the last downstream dam located at DePere, about 8 miles southwest of Green Bay. The SMU 56/57-A area is approximately 3.75 acres, and is located within a 10 acre area comprising the SMU 56/57 Site. The site is immediately adjacent to an industrial area on the northwest side of the river -- the Fort James Corporation facility. Southeast of the site and across the river, are commercial and residential properties. The SMU 56/57-A Site is within the Fox River drainage basin which contains a total drainage area of 6,330 square miles.

The river portion of the Lower Fox River subject to consideration in this response action (SMU 56/57-A site) is an area located along the northwestern bank of the Fox River approximately 4 miles southwest (upstream) from where the Lower Fox River discharges into Green Bay, just offshore from the Ft. James facility. Water depths in this area are approximately 6 to 12-feet. This removal action will address the highest PCB (360 ppm) concentrations and most highly exposed PCB (310 ppm) contaminated sediments in the Lower Fox River. Sampling has shown that the SMU 56/57-A area contains some of the highest concentrations of PCBs detected anywhere in the Lower Fox River. In addition, SMU 56/57-A is within that portion of the River designated as Operable Unit 4, which stretches from DePere Dam to the mouth of the River where it enters Green Bay. The River sediments in OU4 are almost continuously contaminated for the entire length of OU 4 (Figure 2). Without having access to the exact bathymetry data U.S. EPA has estimated the volume of PCB contaminated sediments in SMU 56/57-A to be approximately 21,500 cubic yards, and estimated to contain approximately 1,600 pounds of PCBs. This is currently known to be the most highly contaminated spot in the Lower Fox River.

Current uses of the Fox River are impaired due to the PCB sediment contamination. Sportfishing is heavily restricted by fish consumption advisories, though the advisories are only partially effective, particularly for women, children, and minorities, as shown by site specific surveys and those conducted in the Great Lakes region. This action will not cause the advisories to be removed, but will mitigate increased releases and increased risks to human health and the environment.

B. SITE HISTORY

Lower Fox River

The 39 mile stretch of the Lower Fox River from Lake Winnebago to Green Bay may contain the highest concentration of paper mills in the world. Twenty-two mills are located along this portion of the river. Among that group of mills, six engaged in the production and de-inking of carbonless copy paper containing PCBs, and as a result of those de-inking processes, these mills discharged PCBs to the Lower Fox River. The Mills that have been identified as PRPs are: Appleton Papers Inc., Fort James Corporation, P.H. Glatfelter Company, Riverside Paper Company, U.S. Paper Mills Corporation, and Wisconsin Tissue Mills Inc. Also a former mill owner, NCR Corporation, has been identified as a PRP. Between 1954 and the early 1970's, the six mills produced and recycled carbonless copy paper containing PCBs. These mills discharged PCB-contaminated wastewater into the Lower Fox River either directly or indirectly (through publicly owned treatment works). There are currently estimated to be

approximately 60,000 pounds of PCBs residing within 10.4 million cubic yards of Lower Fox River sediments and 19,000 pounds of PCBs in at least 220 million cubic yards of Green Bay sediments. Table 1 provides the length, mass of PCBs and average hotspot concentrations for each Operable Unit (or "river reach").

Table 1. Summary of Operable Units ("river reach") characteristics

Operable Unit/Area	River or Bay reach Length (miles)	PCB Mass (pounds)	Average hotspot concentration (ppm)
1 - Little Lake Butte des Morts to Appleton	7	4,100	13
2 - Appleton to Little Rapids	18	700	14
3 - Little Rapids to DePere Dam	6	3,200	6
4 - DePere to Green Bay	8	52,000	8
Sub-total for Fox River	39	60,000	9
5 - Green Bay	119	19,000	not determined
TOTAL FOR GREEN BAY AND LOWER FOX RIVER	158	79,000	----------

Table Note: Shaded Row represents the reach in which SMU 56/57-A is located.

Although the total PCB mass released into the Lower Fox River cannot be presently accounted for in river sediments, it is believed the remaining mass of PCBs could be accounted for as follows:

1) PCBs are present, but not yet identified in sediments in Green Bay or the Lower Fox River. In particular Green Bay is not as well characterized, due to its large extent (2700 square miles).

2) PCBs have volatilized into the atmosphere, and

3) PCBs have been released into Lake Michigan from PCB-contaminated sediments and surface water discharging from the Lower Fox River. PCB congener patterns in Lake Michigan sediments, as well as mass balance modeling calculations suggest this has occurred and may still be occurring.

It should be noted that quantifying these releases may be difficult or impossible.

Green Bay Mass Modeling Evaluations conducted by U.S. EPA and WDNR have determined that PCBs residing in Green Bay have been and are continuing to be discharged from the Lower Fox River. Modeling has quantified PCB mass releases into Green Bay, the atmosphere, and Lake Michigan. Other possible sources (e.g., the atmosphere, non-point sources, and other tributaries) contribute little to the PCB loading of Green Bay.

Sediment Management Unit 56-57-A

Fort James' facility is immediately adjacent to the SMU 56/57 and generally considered to be one of the major contributors of PCB contamination to the river. Particularly this area which has the highest known PCB concentrations of any location on the Lower Fox River or Green Bay.

The reason SMU 56/57-A is now a significantly greater environmental risk is because a dredging project undertaken by the PRPs, under an agreement with the Wisconsin DNR resulted in exposing higher concentrations of PCBs in areas where PCBs had been buried more deeply in the sediment. For example, the average concentration of PCBs in the surficial layer (0-11 centimeters) for SMU 56-57-A prior to dredging was 3.8 ppm. Average PCB surface concentrations measured within SMU 56-57-A after last year's dredging project was discontinued were 68.7 ppm (Figure 3), or a 15 fold increase. Areas having only a single dredging pass had surface PCB concentrations averaging 116 ppm or an increase of 30 times over pre-existing PCB concentrations.

C. SITE ASSESSMENT

The majority of sediment and surface water data collected from the Lower Fox River was collected in 1989, 1990, 1992, 1993 - 1998. This included sediments and waters in the general vicinity of SMU 56/57. This data is currently being evaluated as part of a Remedial Investigation/Feasibility Study (RI/FS). Additionally, data was collected within SMU 56/57 during 1999, just before and just after dredging. Only 1999 sediment data collected specifically for the SMU 56/57 dredging project is discussed below. The contamination levels in fish in the Lower Fox River and Green Bay have been monitored by the WDNR, the U.S. Fish and Wildlife Service and others since 1983. Fish collection and analysis were completed in 1983, 1985, 1989, 1994, 1995 and 1997. This data is also being evaluated as part of a RI/FS for the Lower Fox River and Green Bay.

SMU 56/57-A, is within Operable Unit 4, the DePere to Green Bay reach. SMU 56/57-

A currently has a remaining contaminated sediment volume of approximately 21,500 cubic yards, containing an estimated 1,600 pounds of PCBs.

Wildlife Data

The Lower Fox River/Green Bay Natural Resource Trustees have conducted an assessment of injuries to fishery resources of the Lower Fox River/Green Bay environment that result from releases of PCBs from Fox River paper company facilities. The injury assessment included determination of PCB transport pathways from paper company facilities to fishery resources of the river and bay, injury determination, and injury quantification. The injury assessment was conducted consistent with the Department's NRDA regulations at 43 CFR Part 11, and included assessment of injuries associated with state fish consumption advisories because of PCBs, exceedences of the Food and Drug Administration's PCB tolerance level, and adverse effects on fish viability.

The most significant injury to fishery resources of the Lower Fox River and Green Bay that results from paper company PCB releases is the presence of extensive fish consumption advisories. The advisories, ranging from limited to no fish consumption, are in place for dozens of fish species throughout the Lower Fox River, Green Bay, and northern Lake Michigan. The advisories have been in place since the 1970s and continue to the present (1999). The quantification of the losses to the public as a result of the PCB fish consumption advisories is presented in the Trustees' report on recreational fishing damages.

Consistent with the fish consumption advisories are injuries resulting from exceedences of the Food and Drug Administration's tolerance level for PCBs in fish tissue. The tolerance level is exceeded in many fish species throughout the assessment area. This injury is indicative of the extensive PCB contamination of Lower Fox River and Green Bay fish.

Walleye in the Lower Fox River and Green Bay suffer from the injury of increased liver tumors. The injury is most pronounced in female walleye, in which 34% of fish from the river and bay had liver tumors or pre-tumors compared with 7% of fish from reference areas. The Trustees assessed other adverse viability injuries, including brown trout and lake trout health and lake trout reproduction, and concluded that available information does not support a conclusion that these fish currently are suffering from PCB-caused injuries, although they may have in the past.

Adult walleye were collected from several locations in the Lower Fox River and Green

Bay, Wisconsin (the assessment area) and two relatively uncontaminated reference locations (Lake Winnebago and Patten Lake, Wisconsin) between July and October in 1996 and 1997. Mean PCB concentrations in whole body and liver samples were elevated in assessment area walleye (4.6-8.6 and 4.1-7.9 mg/kg wet weight, respectively) compared to PCB concentrations in reference areas (e.g., 0.04 mg/kg in walleye fillets from Lake Winnebago). Mean total PCB concentrations were 87% higher in walleye collected from eastern Green Bay than in western Green Bay, a finding consistent with spatial patterns of PCB contamination in bay sediments.

PCB levels in fish are summarized in the draft Baseline Human Health and Ecological Risk Assessment, dated February 24, 1999. Since 1976, the Wisconsin Department of Health and Family Services and Natural Resources has issued fish consumption advisories for the entire Fox River. In the DePere to Green Bay stretch, current advisories state that no one is to consume white bass, carp, and catfish of any size and no walleye greater than 22". Smallmouth bass, walleye of 16-22" and northern pike larger than 25" may only be consumed once per month. There are no fish, regardless of size or species, which may be consumed without restrictions.

Numerous species of birds throughout the assessment area are exposed to PCBs and documented in the final report titled *Injuries To Avian Resources, Lower Fox River/Green Bay Natural Resource Damage Assessment.* The primary route of exposure for most assessment area bird species is dietary. PCB concentrations measured in the tissues of assessment area bird species are statistically significantly greater than concentrations measured in reference areas. Every species tested has been found to have greater concentrations in the assessment area, including double-crested cormorant, black-crowned night heron, herring gull, Forster's tern, common tern, Caspian tern, mallard, bald eagle, tree swallow, and red-winged blackbird.

PCB exposure of assessment area birds, as measured by PCB accumulation in bird tissue, was greatest in the early 1970s (the first dates for which data are available), declined through the 1970s and through the early 1980s, and has remained relatively stable since then. Total PCB concentrations measured in eggs of assessment area red-breasted mergansers, double-crested cormorants, common terns, Forster's terns, Caspian terns, and bald eagles from 1983 to 1996 are within or, in many cases, exceed the range where adverse reproductive effects have been reported in sensitive species.

The conclusions derived from the evaluation of the testing and sampling data indicate that avian resources of the Lower Fox River/Green Bay assessment area have been injured. Specifically, various fish-eating birds in the assessment area, including Forster's terns, common terns, double-crested cormorants, and bald eagles have been injured as a

result of exposure to PCBs. The injuries report documents death and reduced reproduction, as well as physical deformations. Waterfowl are also injured by exposure to PCBs in the assessment area (i.e. Lower Fox River and Green Bay). This injury comprises exceedences of tissue action or tolerance levels (Section 402 of the Food, Drug and Cosmetic Act [43 CFR § 11.62(f)(1)(ii)]) and Wisconsin State waterfowl consumption advisories.

Experimental studies show that exposure to PCBs can cause death in avian embryos and juvenile and adult birds, cause morphological changes in immune tissues in birds, and induce behavioral effects including decreased parental incubation attentiveness, impaired courtship behavior and abnormal nest building behavior. Neurological effects such as impaired avoidance behavior and depletion of brain neurotransmitter levels can also occur.

The risk to ecological receptors is currently being evaluated by the WDNR and USEPA. Hazard quotients (HQ) are calculated to determine risk by calculating the ratio of exposure to PCBs to toxic effects of PCBs (HQ=exposure/effects). Ratios that exceed 1.0 indicate risk, while HQs less than 1.0 do not. HQ values calculated for the DePere to Green Bay Reach of the Lower Fox River are shown in Table 2:

Table 2, Hazard Quotients

receptor	HQ based on NOAEL	HQ based on LOAEL
birds	<1- 5.6	<1
mammals	476 - 616	15 - 154

NOAEL = no observed adverse effect level
LOAEL = lowest observed adverse effect level

These hazard quotient for mammals is based on ingestion of contaminated food (i.e. primarily fish). The hazard quotient for birds is based on either measured adult tissue or egg concentrations.

Human Health Risk Assessment

The exposed population is very large with approximately 50,000 anglers residing in counties immediately adjacent to the Lower Fox River and Green Bay. Green Bay has similar elevated risks to those observed in the DePere to Green Bay operable unit (OU4). Approximately 2000 Hmong residents are active anglers of the River and Bay. They are

part of an estimated 5,000 total subsistence fishers in this area. There are direct risks to human health and wildlife and the likelihood for additional releases of PCBs by (a) partitioning into the water column, (b) disturbance from prop wash from boat traffic, and (c) higher flows caused by storm events or other events (e.g., ice scour). Any and all of these processes would cause an actual increase in PCBs for fish and wildlife in the immediate area and potentially increase PCBs levels in fish and wildlife in downstream areas if exposed sediments migrate.

Releases and exposures from the area to be addressed will add to already unacceptably high human health risks for the DePere to Green Bay operable unit (OU4). Current risks, taken from the draft Baseline Risk Assessment are as follows: 1) for subsistence fishers, a lifetime reasonable maximum exposure (RME) cancer risk of 1.3 in 1000 (1.3E-3), and non-cancer hazard index (e.g., neurological impacts to infants and children) of 50, and 2) for recreational fishers, a lifetime RME cancer risk of 9.5 in 10,000 (9.3E-3), and a non-cancer hazard index of 35.

Cleanup Goal

An "interim cleanup level" for the uncompleted dredging area will be an average of 10 ppm for PCB concentrations. This represents an approximate 10-fold decrease relative to PCB contaminant concentrations (116 ppm) remaining that were left in areas receiving a single dredging pass last year. The 10 fold decrease in PCB sediment concentrations would proportionally decrease risks to public health and the environment by the similar amounts for the immediate or surrounding area.

Achieving the 10 ppm level would provide a minimally acceptable interim cleanup level, and could be used in an administrative order to define the "endpoint" for the removal action. A "final cleanup level" would be 1 ppm for PCB concentrations for the SMU 56/57-A time critical response. The 1 ppm PCB level is four fold higher than the proposed risk based goal of 0.25 ppm PCB as proposed in the draft Fox River RI/FS, which achieves a lifetime RME cancer risk of 4 in a 100,000 (4E-5) and a non-cancer hazard index (HI) of one. The 1 ppm PCB level is in the range of protectiveness for ecological receptors, if it were considered in an overall average of the final cleanup.

If the average concentrations were less than 10 ppm, but greater than 1 ppm with six inches of sand cover placed over the sediments, the Respondent would not be given a release for that area, but would have achieved minimal compliance with an Agreement (or Order). Achieving the 1 ppm level would give the Respondent a complete release for all 100x100-foot subunit grids where an average of 1 ppm was attained (for each subunit).

Additionally, if 90% of the subunits have a sediment concentration of 10 ppm PCBs or less with no single subunit exceeding 25 ppm, and an average surficial sediment concentration of all subunits is less than or equal to 10 ppm, the Respondent will place six inches of clean sand over all subunits that have not attained a surficial sediment concentration of 1 ppm PCBs or less.

These concentration-based cleanup goals discussed above, do not apply to the "sidewall" areas - that is the edge of the dredging excavation where sediments with higher concentrations of PCBs may be exposed. However, the sidewall areas will be excavated to minimize "sloughing" into adjacent dredged areas that could cause re-contamination of previously dredged areas. These sidewall areas will be limited in area and, as required, will be covered with a layer of clean sand.

The rationale for the cleanup goals are as follows.

1) 10 ppm is an interim cleanup level to address immediate short term risks. This would achieve a greater than 10-fold decrease relative to current exposed contaminated sediments in areas having had only a single dredging pass, and would be close to the average surficial concentrations in this SMU that existed prior to dredging. If needed, additional work could still be required under the RI/FS-ROD process, because a complete release would not be given to the Respondent.

2) 1 ppm as a final goal considers that the final average concentration for the river reach would be lower in some areas and higher in other areas. Although a final cleanup for the Fox River has not yet been determined, a preliminary determination indicates an overall river cleanup number may be less than 1 ppm. The final cleanup number would be a goal that would be an average applied to a particular operable unit of the river. Thus as long as the average concentrations for that river reach/operable unit was achieved, then the required risk reduction would be achieved. Presumably areas with higher concentrations such as SMU 56/57 might have post-remediation average concentrations somewhat higher than other reaches of the river. Other parts of the river, with pre-remediation concentrations much lower than SMU 56/57 would achieve lower final cleanup concentrations, with the overall average PCB concentrations for the river reaching the final cleanup goals.

Monitoring/Sampling

A monitoring/sampling program will be developed to ensure that there are minimal releases during dredging, and no significantly elevated short-term risks occur because of dredging or related activities. Additionally, monitoring would determine if risk-based

interim or other cleanup standards are met. Construction monitoring will consist of turbidity measurements upstream, downstream and in and around the dredge area/containment area. The measurements will be compared to upstream measurements to determine if corrective actions are necessary. Although previous dredging projects indicate that impacts during dredging are minimal, this is nevertheless needed to ensure that no/minimal releases occur. Water samples will periodically be collected to assess PCB contamination within the water column.

Sediments will be collected and analyzed to determine if concentration goals in the dredging area were achieved. Samples will consist of a minimum of 1 sample per subunit grid, and composite samples could be collected and analyzed. This data will be assessed to assist in determining if project objectives have been achieved.

III. THREAT TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT, AND STATUTORY AND REGULATORY AUTHORITIES

Conditions present at SMU 56/57-A of the Lower Fox River constitute a threat to public health, welfare or the environment based upon the factors set forth in 40 CFR Section 300.415 (b) (2) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). These include, but are not limited to, the following:

- **Actual or potential exposure to nearby populations, animals, or the food chain from hazardous substances or pollutants or contaminants.**

PCBs are listed as hazardous substances under Section 311(b)(2) of the Clean Water Act as set forth in 40 CFR Section 116.4 Table A. The Toxic Substances Control Act (TSCA) states that: "exposure of human beings or the environment to PCBs... may be significant, depending upon the quantity of PCBs,...the likelihood of exposure to humans and the environment...".

The SMU 56/57-A Site is located adjacent to an industrial/residential area and is utilized recreationally for boating and fishing. Unrestricted access to the river, direct contact of the Fox River waters with the contaminated sediments, and the high probability for continued releases of PCBs, creates a direct threat to human health and the environment, especially downstream of SMU 56/57-A. SMU 56/57-A has maximum PCB levels of 310 ppm in surface sediments with an average concentration of 68.7 ppm in all surface sediments, 116 ppm in areas receiving only one dredging pass. Sediments are a source of

an ongoing release of PCBs into the waters of the Fox River and Green Bay. The continued release of PCBs into the river could have a detrimental effect on the freshwater organisms living near or downstream of the site.

Adult walleye were collected from several locations in the Lower Fox River and Green Bay, Wisconsin (the assessment area) and two relatively uncontaminated reference locations (Lake Winnebago and Patten Lake, Wisconsin) between July and October in 1996 and 1997. Mean PCB concentrations in whole body and liver samples were elevated in assessment area walleye (4.6-8.6 and 4.1-7.9 mg/kg wet weight, respectively) compared to PCB concentrations in reference areas (e.g., 0.04 mg/kg in walleye fillets from Lake Winnebago). Mean total PCB concentrations were 87% higher in walleye collected from eastern Green Bay than in western Green Bay, a finding consistent with spatial patterns of PCB contamination in bay sediments.

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The conclusions derived from the evaluation of the testing and sampling data indicate that avian resources of the Lower Fox River/Green Bay assessment area have been injured. Specifically, various fish-eating birds in the assessment area, including Forster's terns, common terns, double-crested cormorants, and bald eagles have been injured as a result of exposure to PCBs. The injuries report documents death and reduced reproduction, as well as physical deformations. Waterfowl are also injured by exposure to PCBs in the assessment area (i.e. Lower Fox River and Green Bay). This injury comprises exceedences of tissue action or tolerance levels (Section 402 of the Food, Drug and Cosmetic Act [43 CFR § 11.62(f)(1)(ii)]) and Wisconsin State waterfowl consumption advisories.

- **High levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface, that may migrate;**

The estimated 1,600 pounds of PCBs in contaminated sediments at the Site are in contact with the waters of the Fox River. These sediments are also susceptible to erosion and scouring or other disturbances and increases in water currents and velocities, thereby increasing the threat of further release to the Lower Fox River between the DePere Dam and Green Bay, as well as Green Bay and Lake Michigan.

- **Weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released;**

The Fox River would likely be subjected to extreme weather conditions in the winter and spring that would enhance the threat of a potential release. The breakup of ice in the late winter and the movement of those floes downstream could increase the scouring of the banks or river bottom. Heavy spring rains will increase the current velocity and the volume discharge of the river, thereby increasing load potential. This increase in scouring, stream volume, velocity, and load could cause an increase in the downstream transportation of the contaminated sediments, and constitute a release into Green Bay and Lake Michigan.

- **The availability of other appropriate federal or state response mechanisms to respond to the release;**

State and local response mechanisms are not available to respond to this release. Therefore, the removal program will implement response actions to address the estimated 21,500 cubic yard hot spot containing approximately 1,600 pounds of PCBs. Responding to this material prior to the next high flow period will provide added protection to the Fox River and downstream ecosystem.

IV. ENDANGERMENT DETERMINATION

These PCB-contaminated sediments pose an imminent and substantial endangerment to the citizens in the community due to the biomagnification impacts to aquatic life, fish eating birds, and humans. Actual or threatened releases of hazardous substances from this Site, if not addressed by implementing the response action selected in the Action Memorandum, may present an imminent and substantial endangerment to public health,

welfare, or the environment.

V. PROPOSED ACTIONS

A. Description of the Proposed Action

The preferred response action to mitigate threats associated with PCB-contaminated sediments in SMU 56/57-A consists of removing contaminated sediments**.** This response action includes but is not limited to the following tasks:

- Construct necessary access roads and other necessary infrastructure to work/staging areas.
- Design/construction/preparation of staging and work pad areas to support storage, sediment drying, stabilization, truck loading, truck washing, parking, and general site activity support and service needs.
- Obtain necessary support services/utilities, lighting requirements, site security, etc.
- Design/construction of water treatment and sediment removal/stabilization system.
- Develop and implement an appropriate plan to dewater sediment and treat PCB-contaminated water from dredging and sediment processing prior to return of water to the Fox River and meet all discharge requirements.
- Remove contaminated sediment at SMU 56/57-A (Figure 3) to meet clean-up goal objectives.
- Properly dispose of all PCB-contaminated sediment off-site.
- As appropriate maintain existing silt curtain.
- Prevent further migration of contaminated sediments along sediment removal boundaries or river bank. For example, backfill/stabilize the shoreline and edges of sediment removal boundaries as necessary to prevent erosion and sloughing of river bank or remaining contaminated sediments (i.e. sidewalls). This would minimize or eliminate exposure of contaminants of sidewalls at the edges of sediment removal areas.
- Sample all dredged/excavated areas to determine preliminary cleanup goal

requirements in each subunit grid. Confirmatory samples shall be collected prior to any backfilling or slope stabilization.

- At the end of the response activities and as necessary, restore the areas used for the response action to a secure and confined facility (i.e. replace/reconstruct fencing, install erosion controls as necessary, remove temporary roads as necessary, etc.)

- Develop and implement a Health and Safety Plan in accordance with all appropriate regulations.

- Develop and implement a Quality Assurance Project Plan for sampling and analytical requirements.

- Develop and implement a turbidity and surface water monitoring/sampling program. This includes work to be conducted in and around the SMU 56/57-A as well as upstream and downstream of SMU 56/57-A.

- Develop and implement, as appropriate, an air monitoring/sampling program. This includes work to be conducted in and around the SMU 56/57-A, work/staging, and off-site residential areas.

- Sample and characterize existing work and staging areas to be utilized during the sediment response actions and determine pre- and post-existing contamination and condition of site facilities.

- As appropriate, develop and implement a Demobilization/Decontamination Plan.

The response action will result in removal of the PCB contaminated sediments from SMU 56/57-A (Figure 3). This action will prevent further downstream movement and/or uptake of PCB contaminated sediment.

The response action will be conducted in a manner not inconsistent with the NCP. The OSC has initiated planning for provision of post-removal site control consistent with the provisions of Section 300.415(l) of the NCP. Elimination of all threats is, however, expected to minimize the need for post-removal Site control.

The response actions described in this memorandum directly address actual or threatened releases of hazardous substances, pollutants, or contaminants at the Site which may pose an imminent and substantial endangerment to public health, welfare and the

environment. These response actions do not impose a burden on the affected property disproportionate to the extent to which that property contributes to the conditions being addressed.

These activities will require an estimated 145 on-site working days to complete.

Contribution to Remedial Performance

As stated earlier, the Site has been proposed for the NPL. The WDNR is currently proceeding with the RI/FS process under CERCLA. The long term remedy has not yet been determined for this Site. The RI/FS identifies various alternatives for remedial selection, including but not limited to three primary alternatives of, natural recovery, capping and dredging. The reason SMU 56/57-A is now a significantly greater environmental risk is because a dredging project undertaken by the PRPs, under an agreement with the Wisconsin DNR, resulted in exposing higher concentrations of PCBs in areas where PCBs had been buried more deeply in the sediment. The proposed response action will abate an imminent and substantial threat to public health and the environment at SMU 56/57-A. This action will be consistent with what EPA currently anticipates will be the final remedial action for all of SMU 56/57. The action in response to SMU 56/57-A will only address the area (approximately 3.75 acres) disturbed by the previous dredging attempt initiated by the PRPs under agreement with WDNR.

Applicable or Relevant And Appropriate Requirements

All applicable or relevant and appropriate requirements (ARARs) of Federal and State law will be complied with to the extent practicable. This response action will address PCB contaminated sediment, containing known concentrations up to 310 ppm or more, from SMU 56/57-A. A letter will be sent to the Wisconsin Department of Natural Resources requesting they identify State ARARs. Any State ARARs identified in a timely manner for this removal action will be complied with to the extent practicable.

VI. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

Delayed action will increase the potential of the PCB contaminated sediments to migrate

downstream and also remain in contact with the waters of the Fox River, threatening public health and the environment.

VII. OUTSTANDING POLICY ISSUES

none

VIII. ENFORCEMENT

For administrative purposes, information concerning the enforcement strategy for this site is contained in an Enforcement Confidential Addendum Attachment.

IX. RECOMMENDATION

This decision document represents the selected response action for SMU 56/57-A, part of the Lower Fox River NRDA/PCB Releases Site. It was developed in accordance with CERCLA as amended, and is not inconsistent with the NCP. This decision is based upon the Administrative Record for the Site.

Conditions at the Site meet the NCP Section 300.415(b)(2) criteria for a removal and I recommend your approval of the proposed removal action. It is expected that a potentially responsible party will perform all removal actions under the oversight of the OSC. You may indicate your decision by signing below.

APPROVE: _____ DATE: _____
Francis X Lyons, Regional Administrator

DISAPPROVE: _____ DATE: _____
Francis X Lyons, Regional Administrator

Figures 1-3
Enforcement Addendum
Attachment 1 Administrative Record Index

cc: K. Mould, 5202-G
M. Chezik, Dept. of Interior, w/o Enf. Addendum
G. Meyer, Wisconsin DNR, w/o Enf. Addendum